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NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

Operations/Human Performance Group Chairmen
US Airways Qualification Briefing Guide
Simulator T-6

(7 Pages)

Attachment 19

to Operations / Human Performance Group Factual Report

DCA09MA026

US AIRWAYS QUALIFICATION BRIEFING GUIDE
SIMULATOR T-6

T-6 Study Guide

- **Alternate Law**
  - ECAM will display ALT LAW: PROT LOST (Normal Law protections are lost).
  - There is NO cockpit indication that indicate whether or not specific "stabilities" are available in ALT LAW.

- **Direct Law**
  - Occurs during alternate law when the landing gear is extended.
  - "USE MAN PITCH TRIM" in amber is displayed on the PFD.

- **Mechanical Back Up**
  - Provides for aircraft control during loss of all electrical power until flight control computers are restored.
  - Hydraulic power is always necessary to operate the flight controls.
  - Rudder and THS can be operated in Mechanical back up.
  - Manual pitch trim only is available. MAN PITCH TRIM ONLY is displayed in red on the PFD.
  - Mechanical control of the rudder is accomplished through the rudder pedals.
  - Make small, gentle inputs to trim and rudder.
  - Thrust may be used to induce climb or descent.
  - Note that any FCC (except SEC 3) will provide some pitch and roll control.

- **Stalls**
  - Stalls can only occur while in Alternate or Direct Law (FAC 1 & 2 will be selected OFF).
  - Stalls with the gear down will be in Direct Law; caution for pronounced pitch up when thrust is applied.
  - Review Procedures for Takeoff, Clean, and Landing Stalls

- **Cockpit Duct Overheat ECAM**

- **Bomb Onboard Procedures**
  - FOM Page 5-42
- **Cabin Pressure System 1 & 2 Fault ECAM**
  - Manual Pressurization.

- **Excessive Cabin Altitude/Emergency Descent**
  - If an emergency descent is required for other than an excessive cabin altitude (e.g., LAVATORY SMOKE), refer to the QRH "EMER DESCENT" checklist.
  - If the ECAM warning "CAB PR EXCESS CAB ALT" occurs , perform procedures from ECAM.

- Crew protection is first priority. Don oxygen masks at first indication of a loss of cabin pressurization.
- The captain will assume PF duties for all emergency descents. If the captain is not at a flight station then the pilot in command will perform the emergency descent.
- Determine if cabin pressure is uncontrollable and if obvious structural damage exists.
- If structural damage is suspected, limit airspeed and reduce maneuvering loads as much as possible. It is recommended to use an airspeed at or below that which existed at the onset of the problem.
- The use of autopilot during an emergency descent is strongly recommended.
- PF should select on the FCU:
- Altitude: 10,000' or MSA, whichever is higher.
- Verify OP DES.
- Heading: select a turn or proceed straight ahead.
- Speed: select VMO/MMO or desired airspeed.
- Very slowly extend speed brakes.
- Rapid deployment of the speedbrakes at high altitude/slow speed will cause V_{LS} to be greater than the existing speed and may cause autopilot disconnection and speedbrakes auto retraction if angle of attack protection is activated
- 2000' above level-off altitude, retract the speedbrakes.
- After level-off, ensure ATS is active and set appropriate speed.
- Crew oxygen masks may be removed once cabin altitude does not exceed 10,000.'
- When the oxygen masks are no longer required, close the doors of the mask compartment and push the RESET control slide to restore radio communication to normal. (This deactivates the mask microphone.)
- Once workload permits, assess aircraft condition. Request a cabin check from the flight attendants.

- **Dual FCU Fault** (ECAM) (THIS IS A BRIEFING ITEM ONLY)
  FCU Faults, Single and Dual (Discuss loss of Auto Pilots, Autothrust, and Altitude
  - Alerting with Dual FCU Fault
  - QRH reset procedure

- **Automation Change/Upset training**
  - Always turn towards the sky pointer to right the aircraft's attitude. Increase or decrease thrust dependent on whether nose high or low during upset.
  - Review the section on rudder usage in the PH.

- **ASR Approach**
  - The Controller will issue:
    - Published MDA, missed approach point, lost communication procedures (if IFR conditions are likely), missed approach instructions (if IFR conditions

exist on final approach), headings and relative position of the aircraft, and descent clearance to MDA.

- The Controller will not automatically issue (must be requested): Required visibility (Depends upon aircraft category. Only the visibility is controlling for straight-in approaches: Category C (A319/320) or D (A321), and recommended altitudes on final approach.
- Additional Information:
  - Select an underlying instrument approach in the MCDU (for VERT DEV information) for the runway in use.
  - When the published MDA is not a multiple of 100', round it up to the nearest 100', and set the adjusted MDA in the MDA field on the PERF APPR page.
  - Configure the aircraft as is done for an RNAV approach based on distances of 1,2, and 3 miles from the descent point (equivalent to FAF).
  - After being vectored onto final, expect the controller to say "Do not acknowledge further transmissions." The crew is expected to acknowledge landing clearance, however.

- **FCU Altitude Management on an ASR Approach**
  - When established at the initial approach altitude (FMA indicates ALT in green):
    - Set FCU Altitude window to the specified MDA (rounded up to the next 100 feet).
    - At the top of descent point (equivalent to FAF) initiate the descent utilizing V/S.
    - Once level at the MDA (FMA indicates ALT in green), set the missed approach altitude in the FCU altitude window.

- **Dual Engine Failure (QRH ECAM Exception)**
  - RAT will extend automatically, however QRH directs to MAN ON as a backup.
  - What displays are powered in the cockpit?
  - ECAM will direct the crew to select IGN on the Engine Mode Selector and thrust levers IDLE to attempt an immediate relight.
  - Optimum speed for relight is 300 knots. Allow enough time for a windmilling restart to work. However, if unsuccessful, green dot provides the best lift to drag ratio and is the best glide speed.
  - Start the APU and use APU BLEED for engine start below FL 200.
  - When attempting a windmill start early in the procedure, the item ENG MASTERS - OFF

  30 SEC/ON allows for both ENG MASTERS to be operated simultaneously. However, when the same prompt appears when attempting the APU BLEED start, only one engine should be started at a time. This information is not contained within ECAM, only in the QRH and PH Chapter 21.

- **Windshear / Windshear Escape Maneuver**
  - Review Severe Weather/Windshear tab in the OPS DATA section in the QRH.
  - If windshear is inadvertently encountered after liftoff or on approach below 1,000' AGL, immediately initiate the windshear recovery procedure.

- **ILS PRM (Precision Radar Monitor) Approach and Breakout**
  - Must review "ATTENTION ALL USERS" page and advise ATC prior to commencing approach if unable to comply.
  - In addition to the normal approach briefing, brief the breakout procedure and the minimum vectoring altitude.
  - All PRM approaches are to be flown by the Captain.
  - Use VHF 1 as the primary radio (transmit and receive) and VHF 2 as a "monitor" radio (receive only unless instructed by the tower to switch to that frequency).
  - Plan to use the A/P, F/D, and A/THR for the approach.
  - Breakouts will be hand flown
  - F/O will make all changes to the FCU during a breakout. Review climbing/descending procedures.

- **LOCALIZER Approach/ LANDING**
  - Notes for flying the approach: This approach will be trained to proficiency, however, **it is important For EAST PILOTS to understand that this approach will not be authorized until it is included in our Operations Specification. When that time arrives, the Fleet Captain will notify all Airbus pilots.**
  - (Note: when available, review QRH OD pages)
  - When LOC captured/ select FPV
  - For step down altitudes use open descent
  - When at FAF altitude, **set**, but don't select Charted Flight Path Angle (FPA),example -3.0 (NOTE: setting disappears after 45 seconds).
  - At .4 NM prior to FAF, **select** example: –3.0
  - DO NOT CORRECT TO VERTICAL DEVIATION by changing FPA more than +/- 1°
  - Caution for ALT* when setting FCU altitudes. If the Missed Approach Altitude is lower than the FAF Altitude, delay the setting of the Missed Approach Altitude in the FCU Altitude window until the aircraft is below the Missed Approach Altitude. This will prevent inadvertent capture of the Missed Approach Altitude during final approach.
  - If a Go Around is initiated by selecting TOGA, the fight directors revert to the conventional display and SRS and GA TRK will be displayed on the FMA.

A320 AQP INITIAL/TRANSITION T-6

OBJECTIVES: Session Six provides maneuvers, demonstrations, and validations that help the transition from the MV to the LOE.

SPOT: 1 PRESSURIZATION NON-NORMALS/EMERGENCY DESCENTS
Practice Pressurization Non-normals/Two Emergency Descents.
Captain Seat Specific.

SPOT: 2 DUAL ENGINE FAILURE
Practice Dual Engine Failure. Captain seat specific.

SPOT: 3 LAWS DEMONSTRATION and CLEAN STALL
Normal, Alternate, Direct and Mechanical Laws Demonstrations. Perform Clean Stall recovery

SPOT: 4 TAKEOFF and LANDING STALLS
Both pilots perform Takeoff and Landing Stall Recovery. Captain Seat Specific. F/O Seat Specific.

SPOT: 5 PRMS
Perform Descending and Climbing Breakouts. Perform a TCAS R/A on an ILS PRM. Captain Seat Specific. F/O Seat Specific.

SPOT: 6 ASR APPROACH & LANDING
Perform ASR Approach and Landing. Captain Seat Specific.
F/O Seat Specific.
Perform Localizer Approach and Landing.

SPOT: 7 NON-MANAGED NON-PRECISION APPROACH and LANDING
Perform Localizer Approach and Landing.

SPOT: 8 WINDSHEAR
Perform Windshear recoveries. Captain Seat Specific.
F/O Seat Specific.

SPOT: 9 Automation Change//Upset Training

Accident/Incident Summary

Following normal engine start and taxi, the crew of an A320 was cleared for a night VMC takeoff from Runway 10. The captain was PF and FLEX thrust was utilized. At approximately 120 knots during the takeoff roll, both pilots bECAMe aware of an increasing vibration of unknown origin. There were no other obvious abnormalities and the captain therefore elected to continue the takeoff (V_1 was 140 knots). The vibration ceased as the aircraft bECAMe airborne, and the F/O called out a positive rate of climb. At this point the captain noticed a left gear red "UNLK" indication on the landing gear indicator panel, and he decided to leave the landing gear in the extended position. Shortly after liftoff ECAM warnings occurred due to Yellow hydraulic system loss and locked flaps, and the appropriate ECAM actions were accomplished.

Suspecting a blown tire, the crew advised ATC of the situation and requested a return to the departure airport. ATC confirmed that tire debris had been found on the runway, and the flight was cleared to hold at 8,000' while they prepared for the approach and landing. The captain then briefed the cabin crew and made an announcement to the passengers.

As the crew prepared for their return, the lead flight attendant informed them that a vibration was being felt in the wing area of the cabin. No vibration was felt on the flight deck, but the crew checked the engine indications and noted a left engine N_1 vibration of 9.9 units. The captain retarded the No. 1 thrust lever to idle, and the vibration indication reduced to 0.4 units. With the thrust lever at idle there was no abnormal indication or physical vibration, and the captain elected to leave the No. 1 engine at idle for the remainder of the flight. The crew then notified ATC of this development and declared a "PAN" condition.

The captain evaluated the situation and concluded that debris from a blown tire had caused secondary damage to the Yellow hydraulic system and to the flaps. Review of the ECAM Wheel page indicated that the left gear was in fact down and locked, and therefore the red landing gear "UNLK" light was thought to be a false indication. Given that the weather was good and that the only known problem with the No. 1 engine was high vibration (other engine parameters were normal), the captain elected to hold for one hour in order to reduce the landing weight. ATC was notified and the airport fire fighting/rescue equipment was requested. The captain again briefed the flight attendants and passengers of his intentions, and the cabin was prepared for an emergency landing.

The crew completed all appropriate checklists and procedures, and after the landing weight had been reduced the captain conducted an uneventful approach to Runway 28. The captain elected not to utilize the ground spoilers or thrust reversers, and as he applied brakes he noticed that the nosewheel steering was inoperative. The aircraft was brought to a safe stop with engines secured and no evidence of fire, although the left brake temperatures indicated 800 degrees C. The passengers were instructed to remain seated. Foam was applied to the left landing gear as a precaution, and the aircraft was then towed away from the runway. Stairs were positioned and the passengers exited the aircraft through the 1L door.

Examination of the aircraft indicated that the No. 2 tire failed during takeoff due to foreign object damage. Debris from the failed tire then damaged 17 fan blades in the

No. 1 engine, as well as hydraulic lines associated with the Yellow and Green systems. A subsequent review of flight data recorder information revealed that at approximately 125 knots during takeoff the No. 1 engine N_1 vibration increased abruptly from 1.1 to 12.7 units. The No. 1 engine EGT also increased approximately 60 degrees C at this time.